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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,749	10/06/2006	Dagnachew Birru	USO40181	3689
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EXAMINER HUANG, WEI WU				
ART UNIT 2618		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/599,749

Applicant(s)

BIRRU ET AL.

Examiner

WEN W. HUANG

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,6-8,10,12-15 and 18-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-8,10,12-15 and 18-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/808)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/17/09 has been entered.

Claims 1, 3, 4, 6-8, 10, 12-15 and 18-21 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 3, 4, 7, 8, 10, 12-15, 18, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Palin et al. (US. Pub No. 2005/0176371 A1; hereinafter "Palin") in view of Regulinski et al. (US. Pub. No. 2002/0146979 A1; hereinafter "Regulinski").

Regarding **claim 1**, Palin teaches a method for efficiently utilizing spectrum resources (see Palin, abstract) comprising:

determining at least one spectrum opportunity (see Palin, fig. 10, steps 1002 and 1004; para. [0061]), wherein said opportunity is identified by a frequency band and a time interval (see Palin, para. [0029-30], frequency hopping pattern/time frequency code; fig. 2);

determining whether signals are present in said identified frequency range (see Palin, fig. 10, step 1004; para. [0061]),

wherein if the signals are present (see Palin, para. [0061], fig. 10, step 1004), then analyzing said signals and determining the characteristics of said signals (see Palin, fig. 10, step 1006, para. [0062]);

if the signals are not present in said identified frequency range (see Palin, para. [0061], fig. 10, step 1004), then transmitting desired signals using fixed operating conditions (see Palin, fig. 10, step 1016, para. [0068]);

wherein if the signals are present in said identified frequency range (see Palin, para. [0061], fig. 10, step 1004), then determining a set of altered transmission characteristics based on the determined signal characteristics (see Palin, fig. 10, step 1008, para. [0063]) to allow for transmission of a desired signal in said identified in said identified frequency range (see Palin, fig. 10, steps 1010 and 1014; para. [0065]),

wherein said altered transmission characteristics avoid interference with signals expected in said frequency range (see Palin, para. [0055]); and

transmitting said desired signal using said altered transmission characteristics when said transmission occurs during said time duration (see Palin, fig. 10, step 1014; para. [0067]),

wherein said determining at least one spectrum opportunity comprising:

determining a location of a receiving device (see Palin, fig. 10, step 1002, para. [0061], located within short range); and

determining an estimated received signal characteristics based on a location of said receiving device (see Palin, fig. 10, step 1006, para. [0062]).

Palin is silent to teaching that comprising:

obtaining location and transmission characteristics for known transmitter from at least one database; and

determining an estimated received signal based on the location and transmission characteristics for known transmitters and a location of said receiving device. However, the claimed limitation is well known in the art as evidenced by Regulinski.

In the same field of endeavor, Regulinski teaches a method for efficiently utilizing spectrum resources (see Regulinski, para. [0019], shared spectrum) comprising:

obtaining location and transmission characteristics for known transmitter from at least one database (see Regulinski, para. [0162], location and frequency assignment of base station 119 from database 15); and

determining an estimated received signal based on the location and transmission characteristics for known transmitters and a location of said receiving device (see Regulinski, para. [0162], base station 119 and user terminal 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Palin with the teaching of Regulinski in order to increase the possibility for reusing frequency and improve efficiency (see Regulinski, para. [0010]).

Regarding **claim 3**, the combination of Palin and Regulinski also teaches the method as recited in claim 1, further comprising: determining a time period of reception of said received signal (see Palin, para. [0029-30], frequency hopping pattern/time frequency code; fig. 2).

Regarding **claim 4**, the combination of Palin and Regulinski also teaches the method as recited in claim 1, wherein said received signal characteristics are selected from the group consisting of: received power, modulation, modulation rate and bandwidth (see Palin, para. [0062], measuring energy).

Regarding **claim 7**, the combination of Palin and Regulinski also teaches the method as recited in claim 1, wherein an occurrence of said determining at least one spectrum opportunity is performed from selected group consisting of: periodic, time lapse from a prior occurrence, on a known event (see Palin, para. [0060], on a known event designated from PNC).

Regarding **claim 8**, Palin teaches a device for efficiently utilizing spectrum resources (see Palin, abstract) comprising:

a memory (see Palin, para. [0092]);

a receiving unit for receiving signals and providing received signal characteristics to a processor (see Palin, fig. 12, receivers 1206, 1222);

said processor (see Palin, fig. 12, controller 1202), in communication with said memory (see Palin, para. [0092]), executing code for:

receiving information items regarding at least one spectrum opportunity (see Palin, fig. 10, steps 1002 and 1004; para. [0061]), wherein said opportunity is identified by a frequency band and a time interval (see Palin, para. [0029-30], frequency hopping pattern/time frequency code; fig. 2);

determining whether signals are present in said identified frequency range (see Palin, fig. 10, step 1004; para. [0061]),

wherein if the signals are present (see Palin, para. [0061], fig. 10, step 1004), then analyzing said signals and determining the characteristics of said signals (see Palin, fig. 10, step 1006, para. [0062]);

if the signals are not present in said identified frequency range (see Palin, para. [0061], fig. 10, step 1004), then transmitting desired signals using fixed operating conditions (see Palin, fig. 10, step 1016, para. [0068]);

wherein if the signals are present in said identified frequency range (see Palin, para. [0061], fig. 10, step 1004), then determining a set of altered transmission characteristics based on the determined signal characteristics (see Palin, fig. 10, step

1008, para. [0063]) to allow for transmission of a desired signal in said identified in said identified frequency range (see Palin, fig. 10, steps 1010 and 1014; para. [0065]),

wherein said altered transmission characteristics avoid interference with signals expected in said frequency range (see Palin, para. [0055]); and

enabling transmission of said desired signal in said opportunity frequency range using said altered transmission characteristics when transmission of said desired signal occurs during said opportunity time duration (see Palin, fig. 10, step 1014; para. [0067]),

determining said at least one spectrum opportunity information items based on a location of said device (see Palin, fig. 10, step 1002, para. [0061], located within short range).

Palin is silent to teaching that comprising

determining said at least one spectrum opportunity information items based on location and transmitting characteristics of known transmitting signals stored in a database. However, the claimed limitation is well known in the art as evidenced by Regulinski.

In the same field of endeavor, Regulinski teaches a device for efficiently utilizing spectrum resources (see Regulinski, para. [0019], shared spectrum) comprising:

determining said at least one spectrum opportunity information items based on location and transmitting characteristics of known transmitting signals stored in a database (see Regulinski, para. [0162], location and frequency assignment of base station 119 from database 15; user terminal 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Palin with the teaching of Regulinski in order to increase the possibility for reusing frequency and improve efficiency (see Regulinski, para. [0010]).

Regarding **claim 10**, the combination of Palin and Regulinski also teaches the device as recited in claim 8, wherein said processor further executing code for determining spectrum opportunity information items based on said received signal characteristics (see Palin, para. [0062], measuring energy).

Regarding **claim 12**, the combination of Palin and Regulinski also teaches the device as recited in claim 8, further comprising an input/output unit in communication with said processor (30) and said memory (32) (see Palin, fig. 12, transceiver 1204, para. [0092]).

Regarding **claim 13**, the combination of Palin and Regulinski also teaches the device as recited in claim 8, wherein said code is stored in said memory (see Palin, para. [0092]).

Regarding **claim 14**, the combination of Palin and Regulinski also teaches the device as recited in claim 8, further comprising a transmitting unit for transmitting said desired signal (see Palin, fig. 12, transceiver 1204, fig. 10, step 1014).

Regarding **claim 15**, Palin teaches a wireless communication system (see Palin, abstract) comprising:

a receiving unit for receiving information items regarding at least one receivable signal (see Palin, fig. 12, receivers 1206, 1222);

a processing unit (see Palin, fig. 12, controller 1202) for determining at least one spectrum opportunity (see Palin, fig. 10, steps 1002 and 1004; para. [0061]) and for determining whether signals are present in said identified frequency range (see Palin, fig. 10, step 1004; para. [0061]),

wherein if the signals are present (see Palin, para. [0061], fig. 10, step 1004), then analyzing said signals and determining the characteristics of said signals (see Palin, fig. 10, step 1006, para. [0062]);

a management unit for altering (see Palin, fig. 12, controller 1202, 1208), if the signals are present in said identified frequency range (see Palin, para. [0061], fig. 10, step 1004), transmission characteristics of a desired signal based on said at least one spectrum opportunity (see Palin, fig. 10, step 1008, para. [0063]) and said determined received signal characteristics (see Palin, fig. 10, step 1006, para. [0062]),

wherein said altered transmission characteristics avoid interference with said received signals (see Palin, para. [0055]); and

a transmission unit (see Palin, fig. 12, transceiver 1204) receiving said altered transmission characteristics to transmit said desired signal (see Palin, fig. 10, step 1014; para. [0067]), and

if the signals are not present in said identified frequency range (see Palin, para. [0061], fig. 10, step 1004), then transmitting desired signals using fixed operating conditions (see Palin, fig. 10, step 1016, para. [0068]).

Palin is silent to teaching that wherein said receiving unit includes a processor for receiving information associated with location and transmission characteristics of known transmitting signals and said information items are determined from said location and transmission characteristics of said known transmitting signals. However, the claimed limitation is well known in the art as evidenced by Regulinski.

In the same field of endeavor, Regulinski teaches a device for efficiently utilizing spectrum resources (see Regulinski, para. [0019], shared spectrum) wherein said receiving unit includes a processor for receiving information associated with location and transmission characteristics of known transmitting signals and said information items are determined from said location and transmission characteristics of said known transmitting signals (see Regulinski, para. [0162], location and frequency assignment of base station 119 from database 15; user terminal 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Palin with the teaching of Regulinski in order to increase the possibility for reusing frequency and improve efficiency (see Regulinski, para. [0010]).

Regarding **claim 18**, the combination of Palin and Regulinski also teaches the device as recited in claim 15, wherein said opportunities are determined with regard to

frequency ranges and time periods (see Palin, para. [0029-30], frequency hopping pattern/time frequency code; fig. 2).

Regarding **claim 19**, the combination of Palin and Regulinski also teaches the device as recited in claim 15, wherein said altered transmission characteristics are selected from the group consisting of: power, modulation, modulation type and coding rate (see Palin, para. [0062], measuring energy).

Regarding **claim 21**, the combination of Palin and Regulinski also teaches the device as recited in claim 15, wherein said desired signal transmission characteristics are altered in a frequency range/time period to avoid interference with signals expected in said frequency range (see Palin, para. [0063], altered frequency hopping pattern).

2. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Palin and Regulinski as applied to claim 1 above, and further in view of Diener et al. (US. Pub No. 2003/0198200 A1; hereinafter "Diener")

Regarding **claim 6**, the combination of Palin and Regulinski teaches the method as recited in claim 1.

The combination of Palin and Regulinski is silent to teaching that wherein said receiving device location is selected from the group consisting of location engine. However, the claimed limitation is well known in the art as evidenced by Diener.

In the same field of endeavor, Diener teaches that wherein said receiving device location is selected from the group consisting of location engine (GPS location), and manual input (see Diener, fig.15, location engine 210).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Palin and Regulinski with the teaching of Diener in order to exploit all the benefits of the unlicensed band without degrading the level of service (see Diener, para. [0005]).

3. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Palin and Regulinski as applied to claim 15 above, and further in view of Butala (US Pub No. 2004/0203987 A1).

Regarding **claim 20**, the combination of Palin and Regulinski teaches the device as recited in claim 15.

The combination of Palin and Regulinski is silent to teaching that wherein said desired signal transmission power in a frequency range of said received signals is substantially higher when said received signals are not present. However, the claimed limitation is well known in the art as evidenced by Butala.

In the same field of endeavor, Butala teaches a device wherein said desired signal transmission power in a frequency range of said received signals is substantially higher when said received signals are not present (see Butala, para. [0077]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Palin and Regulinski with the teaching of Butala in order to reduce interference and improve communication quality by power control (see Butala, para. [0008]).

Response to Arguments

Applicant's arguments with respect to claims 1, 8 and 15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WEN W. HUANG whose telephone number is (571)272-7852. The examiner can normally be reached on 10am - 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on (571) 272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/W. W. H./
Examiner, Art Unit 2618

/Matthew D. Anderson/
Supervisory Patent Examiner, Art Unit 2618